

# (12) UK Patent Application (19) GB (11) 2 161 618 A

(43) Application published 15 Jan 1986

(21) Application No 8517397

(22) Date of filing 10 Jul 1985

(30) Priority data

(31) 8417869

(32) 13 Jul 1984

(33) GB

(71) Applicant

Telephone Cables Limited (United Kingdom),  
Chequers Lane, Dagenham, Essex RM9 6QA

(72) Inventors

Clifford Heywood  
Ronald Yaxley Gill

(74) Agent and/or Address for Service

H V A Kirby,  
Central Patent Department (Wembley Office), The  
General Electric Company plc, Hirst Research Centre,  
Wembley, Middlesex HA9 7PP

(51) INT CL<sup>4</sup>

G02B 6/44

(52) Domestic classification

G2J GCA1

(56) Documents cited

GB 1598536

GB 1423590

US 4457583

GB 1495496

EP A2 0033103

US 4147406

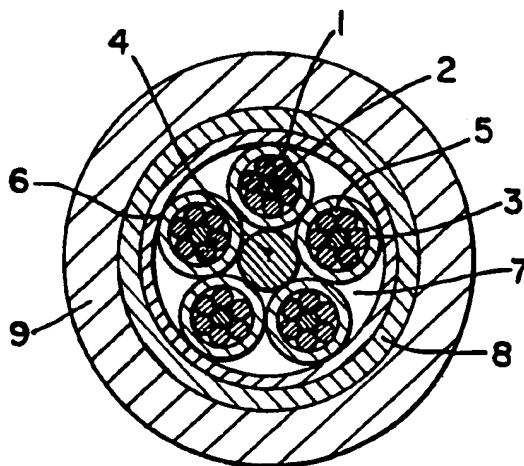
GB 1425928

(58) Field of search

G2J

## (54) Optical fibre cables

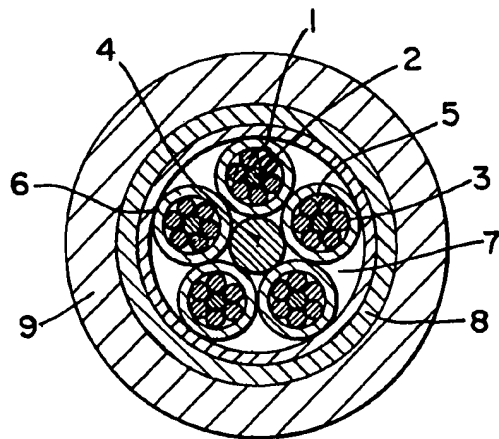
(57) An optical cable comprises several stranded cores each one comprising a plurality of optical fibres (1) stranded together in an S/Z lay formation around a strength member (2) and bound together at intervals along their length by means of a tape (3). The stranded cores are themselves stranded together around a strength member (4) and surrounded by a protective sheath (6) which is in turn surrounded by a metal tape (8) and an extruded plastic sheath (9).



GB 2 161 618 A

2161618

///



## SPECIFICATION

## Optical fibre cables

5 The present invention relates to optical fibre cables and particularly to such cables whereby the fibres are suitably protected and free from strain during manufacture, laying the cable and in operating service.

10 Accordingly, the invention provides an optical cable comprising at least one stranded core incorporating a plurality of optical fibres stranded together in an S/Z lay formation and bound together at intervals along their length,

15 for example by means of a tape, a protective sheath surrounding said at least one stranded core, a metal tape surrounding said protective sheath so as to provide a moisture barrier and an extruded plastic sheath surrounding said moisture barrier.

20 Preferably the stranded core includes a central strength member around which the fibres are stranded and the interstices of said stranded core may be filled with a water repellent medium such as petroleum jelly.

25 The cable may consist of a plurality of stranded cores stranded together in an S/Z lay formation, possibly around a further strength member, within the protective sheath which is preferably a paper or plastic tape wrapped longitudinally around the or all of the stranded cores. The strength member where provided may be covered with a relatively soft material to protect the fibres that are stranded around it.

30 The optical fibres may be strengthened and protected by either a tight coating of plastic or they may be contained within small micro-bore plastic tubes each having a minimal outside diameter. The tubes containing the fibres may, if desired, contain a thixotropic or other medium to prevent the ingress of moisture and/or cushion the fibre against vibration. Further, each or some of the fibres within the cable may be coloured as required and each or some of the tubes or tight coatings may be suitably coloured for identification purposes.

35 One embodiment of an optical cable in accordance with the invention will now be more fully described by way of example with reference to the drawing which is a cross-sectional view through such a cable.

40 A plurality of optical fibres 1 are stranded in an S/Z lay formation around a strength member 2 to form a stranded core. These fibres are held together at intervals along the length of the core by a tape 3 made of paper, plastic, or any other suitable material which may be coloured if desired for identification purposes. The interstices 5 between the fibres and the strength member are filled with a water repellent medium.

45 Several of these stranded cores (in the illustrated case, five cores) are then stranded

longitudinally, helically, or in S/Z lay formation around a central strength member 4 and the interstices 7 may also be filled with a water repellent medium if desired.

70 The plurality of cores are then bound together by wrapping a paper or plastic tape 6 around them longitudinally. A metal moisture barrier such as steel or aluminium tape 8 is then applied around the first tape 6 and finally a plastic sheath 9 is extruded around the steel or aluminium tape to form the finished cable, which in turn can be placed inside a loose fitting annular sheath.

## 80 CLAIMS

1. An optical cable comprising at least one stranded core incorporating a plurality of optical fibres stranded together in an S/Z lay formation and bound together at intervals along their length, a protective sheath surrounding said at least one stranded core, a metal tape surrounding said protective sheath so as to provide a moisture barrier and an extruded plastic sheath surrounding said moisture barrier.

2. An optical cable according to Claim 1 wherein said stranded core includes a central strength member around which the fibres are stranded.

3. An optical cable according to Claim 2 wherein said central strength member is covered with a relatively soft material in order to protect the fibres stranded around it.

4. An optical cable according to any of Claims 1, 2 or 3 wherein the fibres are bound together at intervals along their length by means of a tape either paper or plastic.

5. An optical cable according to any preceding claim wherein the interstices in said stranded core are filled with a water repellent medium.

6. An optical cable according to any preceding claim wherein each optical fibre is enclosed within a tight plastic coating.

7. An optical cable according to any one of Claims 1 to 5 wherein each optical fibre is contained within a small micro-bore plastic tube.

8. An optical cable according to Claim 7 wherein each micro-bore plastic tube also contains a thixotropic or other medium to prevent ingress of moisture and/or protect the fibre against vibration.

9. An optical cable according to any preceding claim comprising a plurality of stranded cores stranded together in an S/Z lay formation.

10. An optical cable according to Claim 9 including a further strength member around which the stranded cores are stranded.

11. An optical cable according to any preceding claim wherein said protective sheath is either a paper or plastic tape wrapped longitudinally around the or all of the stranded cores.

12. An optical cable according to any pre-

ceding claim wherein one or some or all of the fibres, tight coatings if used, micro-bore tubes if used, or binding tapes are coloured for identification purposes.

- 5 13. An optical cable substantially as hereinbefore described with reference to the accompanying drawing.

---

Printed in the United Kingdom for  
Her Majesty's Stationery Office, Dd 8818935, 1986, 4235.  
Published at The Patent Office, 25 Southampton Buildings,  
London, WC2A 1AY, from which copies may be obtained.